# TDARS News Letter

G3ZME G6ZME

TELFORD AND DISTRICT AMATEUR RADIO SOCIETY

www.TDARS.org.uk FOUNDED 1969 www.TelfordHamfest.co.uk

Issue 299 March-April 2021


www.TDARS.org.uk **Programme** www.telfordhamfest.co.uk

***IMPORTANT NOTICE:*** ***ALL MEETINGS AT LWVH POSTPONED UNTIL FURTHER NOTICE***

**Dates and Events that follow are subject to change at short notice.**

**March 24** ‘Software for Amateur Radio’ - Chris Colclough G1VDP. 8pm (Webex)

**March 31** ANNUAL GENERAL MEETING 8pm. Online via Webex. Members all invited.

**April 7** Committee Meeting (Webex) + 2 metre chat night 144.600 MHz +/-

**April 14** SOTA (‘Summits on the Air’) video followed by Q and A session. 8pm (Online)

**April 21** Contest and Portable planning for when restrictions permit (Online + 2 metres)

**April 28** Amateur Radio—3D printing for beginners. Paul M0PLA presentation (Online)

**May 5** Committee Meeting (Online) + 2 metre chat night 144.600 MHz +/-

**May 12** “The Microwave Bands” - Neil Underwood G4LDR (Chairman UK uWave group) Online presentation.

**May 19** Little Wenlock Village Field Meeting (behind the Huntsman) in person—Govt. Restrictions permitting.Bring /P radio/antenna. Also LEO satellite operation.

**May 26** (TBC) RC Cars & Planes: Location field near Longdon-on-Tern. Contact John M0JZH for precise location and confirmation of arrangements. Also groups.io

**NOTE:-** Most meetings currently take place on-line. Unless otherwise stated these meetings are open to Members Only. If you don’t receive an e-mail invitation, and you have paid up, then please contact Graham G7LMF (e-mail address below)

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***For Equipment Loans & Returns contact Don M0TBQ.***

***For “Beyond Exams” scheme (Club or Individual) —enquiries to Graham G7LMF***

***For Morse Training and Morse Proficiency Tests Martyn G3UKV or Eric M0KZB.***

Radio Amateur Exams- Latest: Contact Graham G7LMF training@tdars.org.uk

# Editorial

Depending on the Government's "Road Map" for the relaxation of Covid-19 restrictions on all of us, there is a good chance that TDARS may be able to recommence meetings at Little Wenlock Village Hall from Wednesday 23rd June. In anticipation of this, and still observing social distancing rules etc, it is planned to hold a "real" meeting on Wed. 19th May on the LW Village Field, just behind the Huntsman pub. Members are invited to bring along a radio and suitable antenna (with support) to use until darkness. It is hoped that there will also be a live demonstration of LEO (Low Earth Orbiting) amateur satellite(s) from that location. Arriving from about 7:30pm, we shall spread out, of course. Let's hope the weather and prevailing social rules are kind to us that evening.

Since the late 1920's, many radio amateurs have indulged in the Radio Contesting side of the hobby—essentially to obtain the maximum number of stations/points within a given time period. They used to only take place at weekends, but now take place on various weekdays (to the annoyance of some operators who find the QRM almost intolerable). Recent comments on the TDARS groups.io reflector have given rise to a range of views on the subject, and I must confess to being less enthusiastic for contesting than once was the case, particularly 24 hour events. However, 'having a dabble' is a worthwhile activity since only by actually getting on-air do you really get a true picture of how effective your equipment and antenna(s) are. Perhaps understated in recent comments, operator skills, experience and persistence are crucial if winning certificates and trophies are sought. There is no easy shortcut, but everyone has to start somewhere. See also further update on page 4. Meanwhile, why not *Give Contests a Go ?!*

Telfordhams

**MIV**

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**Peter, G4URT, [yagi article on page 5 ]** listed the following useful website links:-

G0KSC : https://www.innovantennas.com/en/owl-benefits.html

2m G/T Tables : https://www.sm2cew.com/gt.htm

John LeMay G4ZTR : http://www.g4ztr.co.uk/my-business/

Derek G4CQM : https://qsl.net/g4cqm/

Powabeams (G6HKS) : http://www.powabeamantennas.co.uk/

Aluminium Supplier : https://www.aluminiumwarehouse.co.uk/

@g3zme

SotaBeams : https://www.sotabeams.co.uk/

Science Centre, Herstmonceux, Sussex : https://www.the-observatory.org/

The DxShop : https://thedxshop.com/

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## ***TELFORD & DISTRICT AMATEUR RADIO SOCIETY : 2019-21***

**CHAIRMAN**: Simon Bird G0UFE (telfordslivewire@hotmail.co.uk Tel: 01952 401018)

**VICE-CHAIRMAN**: Martyn Vincent G3UKV (ukv@ukv.me.uk Tel:01952 255416)
**SECRETARY**: John Humphreys M0JZH (m0jzh@yahoo.co.uk Tel:07824 737716)
**TREASURER**: Paul Athersmith M0PLA (paul.athersmith@gmail.com Tel:07966 969230)
**CURATOR** : Don Nicholls M0TBQ (donsnicholls@outlook.com Tel: 01952 411680)
**TRAINING and 'Beyond Exams'**: Graham Cowan G7LMF (training@tdars.org.uk)
**NEWSLETTER EDITOR**: Martyn Vincent G3UKV (01952 255416 or 07421 001166)
**PUBLICITY/WEBMASTER :** Dave G0CER (davekh@gmail.com )
**Committee**: Brian G6UDX; Graham G7LMF; Ian M0IRP; Village Hall Committee Liaison officer Martin 2E0TRO. QSL Manager Paul M0PNN; Assist Curator: Chris 2E0EOH; Trophies/Certs: Martyn G3UKV.

# Qtc: News & Information

**TDARS MEETINGS EVERY WEDNESDAY EVENING HELD NORMALLY AT LITTLE WENLOCK VILLAGE HALL**
**NO MEETINGS AT LWVH UNTIL FURTHER NOTICE (Covid-19)**

**Please note: A current membership card may be required to borrow TDARS equipment. Please return borrowed equipment promptly .**

***The use of Webex online for TDARS*** has continued throughout the period and will continue for the present. We hope to return to regular meetings at LWVH from Wednesday 23rd June, depending on government announcements. Club nets continue (Sundays, 9pm 144.6MHz FM +/-. Also 3.657MHz SSB, Mondays & Fridays from 8:45 am )

***Future speakers provisionally booked*** include Chris Colclough G1VDP (A.R. Software), Summits on the Air (TBC), Neil Underwood G4LDR (microwave bands), Magnetic Loop antennas (TBC). The programme of events has rarely, if ever, been so varied in the lifetime of TDARS. Unfortunately, less than half of club members have actually signed in to these excellent talks and presentations on a regular basis. Invites are sent out to all paid-up and honorary TDARS members.Contact Graham G7LMF (bottom Pg.) if you've been missed off.

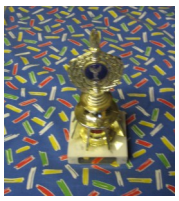
**The *TDARS Annual General Meeting* takes place on WED. 31 MARCH 2021 at 8pm, via Webex.**


**AGENDA :**

1) **Apologies**
2) **Minutes of AGM held 27 March 2019, and Matters Arising**
3) **Chairman's Report**
4) **Treasurer's Report & accounts (2019-21) 2021/22 subscription rates**
5) **Appointment of Auditors 2021/2022**
6) **Election of Society Officers and committee**
7) **Presentation of Awards and Trophies**

Any other items for inclusion in the Agenda must be sent in writing to the Hon. Secretary, John M0JZH, at least 2 weeks before the AGM.(m0jzh@yahoo.co.uk, or posted).

At the AGM, various Trophies are awarded. There are 7 at present, including:-



DF Trophy from Summer series of DF hunts.

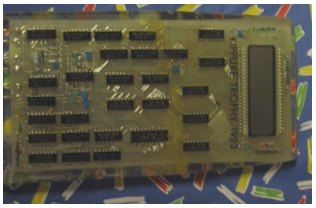
Syd Poole (G3IMP) Keyer Trophy, voted by the club's Committee for the member who has shown outstanding on -the-air operating standards in the past year.

Jack Hassall Trophy for the Member who has contributed the most to the Society in the past year. Chosen by vote of all members attending the AGM.

Main Construction Competition Trophy: Beginner's only.

Under a Fiver (£5) construction trophy winner.

Main Construction Competition Trophy.



Spoof Kippure Trophy—the trophy that no one wants to win !

As most readers know, TDARS has ***two club callsigns***—**G3ZME** (NoV with G3UKV) and **G6ZME** (NoV with M0JZH). It also holds a ***Special Contest Callsign*** (SCC) **G3Z** (NoV with G3UKV) which it uses just a few times a year (usually June 50MHz Trophy and May 432 and Up contest) . To obtain a SCC, the applicant has to prove they are active in contesting, and points are awarded according to a RSGB formula. Peter G4URT asked the Chairman of the RSGB's Contest Committee, Ian Pawson G0FCT, for some clarification on a number of details re SCC, and here are some of his responses:

""This call sign may only be used in amateur radio contests of no more than 48 hours duration, run with the aim of contacting as many other stations as possible in a given period of time and run by an amateur radio club, national or international amateur radio association or another organisation (including amateur radio publications), generally accepted within the amateur radio hobby (locally, nationally or internationally) as being a bona fide contest organiser."
"You can use G3Z (with permission of the NoV holder - Martyn Vincent G3UKV) in the ARI 2m EME Contest as long as the rules of this contest do not ban the use of special contest call signs (unlikely but you never know) and it lasts no longer than 48 hours" (this refers to a specific unlisted contest that Peter possibly wanted to enter using G3Z—**Ed**)
"You are correct in your assumption that any entry for this EME contest is very unlikely to be counted towards the renewal of G3Z. There are no plans to extend the 'shelf-life' of SCC NoV. All SCC NoV expire on 31st December 2024."

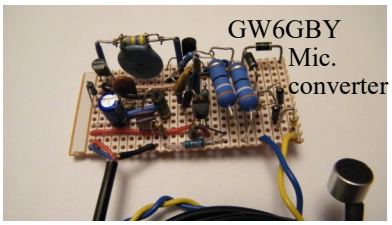
In summary, the club's ***Special Contest Callsign G3Z*** may be used in most contests by TDARS members, with the permission of the NoV holder (Martyn, G3UKV). When applying or renewing a SCC, only the RSGB website listed contests will count towards acceptance of an applicant. See https://rsgb.org/main/operating/licensing-novs-visitors/online-nov-application/application-for-a-special-contest-call-sign/ for this list of contests and further information. Of course, anyone holding a 'Full' Am. Radio licence may apply for a personal Special Contest Callsign, but all current SCCs expire at the end of 2024.

Martin 2E0TRO, our LWVH liaison officer, has received confirmation from the Chairman of the Village Hall Committee that they expect (hope) to return to normal bookings from 21st June:
**"We are hoping to re-open the hall on the following basis – subject, of course, to confirmation from the authorities:-All organised group activities and events, Private hire events (weddings, children's parties, business meetings etc).** ***All rooms open, including the kitchen. No restrictions on numbers*** **" Good news!**

***WELCOME to recent new TDARS members***, including Patrick Kemmis G4MGI who lives between Newport and Stafford, and has just purchased a pair of DT71 SMD pliers, which he finds a "bit fiddly".

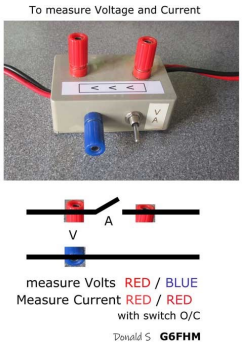
At the end of January, our usual ***"Under a Fiver" annual construction competition*** took place, but for the first time, online via Webex. Our thanks to Graham G7LMF who organised the practical logistics on the night very successfully. **Here are the results** and some photos of the various entries: **Congrats** to Paul M0PLA.

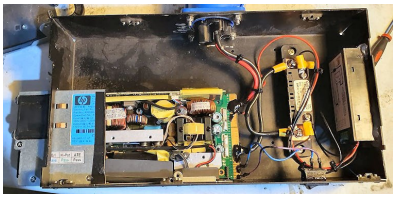
***First place - Entry 6 - 3D printed FT817 Stand (£1) - Paul M0PLA***
= Second place - Entry 5 - Delta loop antenna for 4Metres (£3) - Simon G0UFE
= Second place - Entry 13 - The WAB Penknife (£5) - Heather M0HMO
= Second place - Entry 1 - Carbon mic to Electret mic converter (£5) - Robert GW6GBY
Third place - Entry 10 - Cheap Thirty Amp Power Supply (£4) - Paul M0PNN

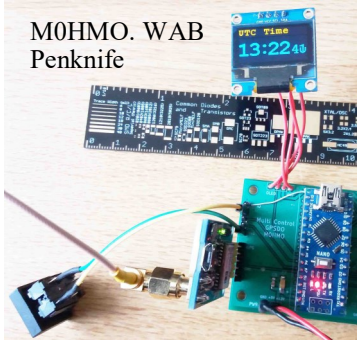


G6FHM Measure V, A

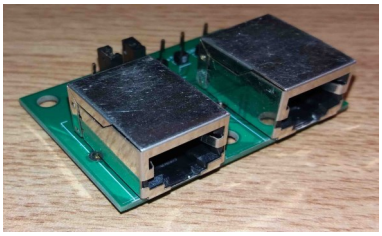


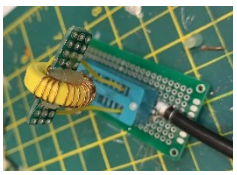
M0PNN—30A PSU




'Panrad'—G8AQA

M0HMO—FT817/857 breakout board



M0PLA Micro dual band trapped dipole (part)

70cm Moxon by Tony 2E0PZM

# Power Musing, Measurements and Ramblings from Criggion

by Robert GW6GBY (aka 2W0FOI):

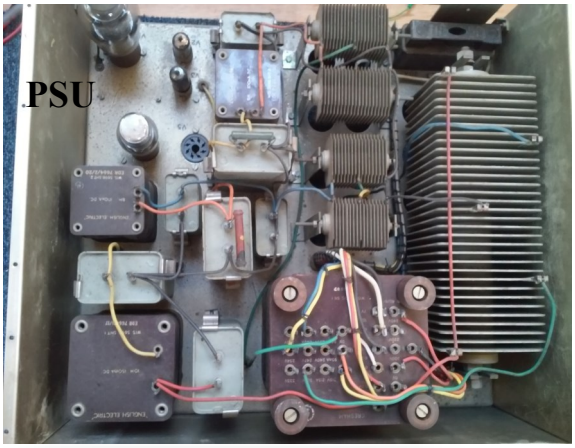
## Part 2: A Tower Block of a Receiver

In November last year I read on one of the many radio interest internet feeds that the South Manchester Amateur Radio Club (est. 1948) had lost their club house (yet again, see photo) in Sale, South Manchester. It has been sold from under them. The rub was they had a rather large Marconi HR24 receiver (see photo) that needed a new home and rather quickly to. To cut a long story short I offered the un-seen receiver temporary storage at Criggion. Two days later I was sitting in the car park with a van, watching Christmas trees being sold on from the car park.

After having the receiver back in Criggion for less than an hour, it was very apparent that the HR23/24 receiver (I'm still not sure which it is), was incomplete. Both LSB units were missing, but it had three (an extra) SF/IF unit. The wire loom was also a mess and appears to be a combination of 2 or more looms twinned in a way I could not quite decide.

The HR24 is a dual diversity, double conversion receiver 1960's. vintage. It comprises (when complete) 8 racks x 19" racks and standing 7'6" high in its original rack. The receiver comprises two power supplies, one unregulated, one regulated (photo below). A carrier and monitor unit, an oscillator unit (actually two in one). Two SF/IF units and two LSB units. Interestingly enough, the LSB units can be fed with one of two LO frequencies tracking above or below the 2nd IF of 2.5MHzs. This allows LSB to become USB. A U link on the oscillator shelf allows for LSB/USB selection. CW is also handled but not AM. With both LSB shelves missing, this is not a usable receiver. However, I have a diversity pair of Marconi HR28's receivers (a later design) and fortunately a spare SSB module. I hope to utilise this SSB module (which supports both side bands) to give at least one receive leg and get a usable SSB receiver.

I have installed shelf runners from scrap angle I had lying about in the replacement wheeled racks and am now currently doing battle with the wiring. Both power supplies are working and use mostly selenium rectifiers (several, see photo), gas regulators and an 807 (beam tetrode) used as a series regulator. Fortunately, unlike the later HR28 I have, the earlier power supply uses non-polarised TCC capacitors (only the dreaded Hunts are used in the many screen grid feed/decoupling), which is why it probably works first time after 10+ years in hibernation.




There is a working HR24 receiver at the RAF Henlow Museum which I understand is soon to be sold off for housing late 2022/2023 (The whole of the Radio Engineering Unit (REU) and the former Officer Command Training Unit (OCTU) which I knew so well in the 1970's.

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Photo: G8AQA

**Thanks for Newsletter input this time:**

**Robert GW6GBY, Peter G4URT, Graham G7LMF, Paul G8AQA, Martin 2E0TRO, John M0XJA, David M0YDH**

**Next edition May / June 2021**

**Please keep it coming— Don't just leave it to someone else !**

# **Building a new 2m EME Array at chez URT**—By Peter G4URT

I've been operating 2m EME since January 2013 when I worked my first station of the moon. I was absolutely chuffed to work Gary, KB8RQ, but at the time didn't realise how colossal his antenna system was and it didn't probably need such an array (4 * 9 LFA) to work him!

That array was built from published plans by Justin (G0KSC) of Innovantennas. It was a 9 element LFA design with 1/2" tube as the directors. The 4-way splitters came from John G4ZTR who still dabbles in antenna bits and pieces. All the aluminium for this and subsequent antennas came from Aluminium Warehouse. Best price around and postage was (is?) free over a certain amount. It was quite a substantial build and worked well, but I decided to try something else, so it was flogged and a couple of them were last heard of as a /P contest station on the North Downs.

The next array was from plans by Derek G4CQM who still has a very good website with his antenna designs. He designs for G6HKS Powabeams that are sold through the DxShop (highly recommended source of VHF/UHF kit – Roger is a great supplier and not a million miles away). Derek's designs use 3/16" rod as the directors. This is due to his original designs using 'Netlon' green insulators. These were designed to attach thick garden netting to walls so sweet peas etc could grow up them and that is why he used 3/16" rod as that was size of 'hole' in the fittings. Eventually they designed and marketed insulators with the 3/16" rod in mind and these can be found on the PowerBeams website. The only problem with using 3/16" rod is that it is a bit flimsy and expensive (and they will bend if your local herring gull population decided to land on them). 1/4" (or 6mm) rod is much easier to obtain and is significantly cheaper. Luckily the commercial insulators from G6HKS can be drilled out to accommodate 1/4" rod so I asked Derek if he could re-do his 10 element design for 1/4" rod which he did very quickly.

So, four of these were built and they worked very well indeed. So much so, that in a future life (and I still have them just in case) a couple were used very successfully in a /P EME demonstration station at the local science centre where I used to live (The Herstmonceux Science Centre).

However, it had became clear that the way forward for effective EME use (due to spatial / Faraday rotation) was having both horizontal and vertical elements which could not be accommodated in Derek's design so it was back to Justin. Yet again he fiddled with his 9 element LFA design and produced an H/V design for me again using 1/4" rod. An advantage of the LFA was that my QTH had got much 'noisier' since I started and these would be an advantage over the G4CQM design.

So, the 3rd array was built and again worked well. This travelled with me to Wem and was subsequently put up again. However, the world of EME is a bit like Tescos 'every little helps' in that 'every dB helps'. In the past few years designers have been using more efficient computer programs and techniques and nowadays an antenna which would have had a gain of say 13dB is now at least half a dB better for the same length.

On the basis of 'you can't take it with you', I then started a search for a commercial H/V 2m beam. Yes, I was actually going to BUY an array. There are plenty of designs around but not many suppliers. I looked at Antenna-Amplifiers and was impressed with the specs but not so with the weight. Then, one day I was flicking through Radcom and came across an advert from Justin on his OWL design. I then consulted the VE7BKH G/T [*Gain-to-noise Temperature*—**Ed**] tables and saw that for the length they were very good indeed. Basically they seemed to tick all the boxes :good gain for length (12.59) and good G/T figure (5.9) So, I emailed Justin with my requirements, we agreed on a price for 4 and the following is my experiences with actually building an array I hadn't cut and drilled myself.

One day a long (2.5m) round tube and a box arrived. They went straight into the garage and I only did a cursory look as it was too damn cold with more cold on its way. Time to wait for better weather! Better weather arrived and I unpacked everything...where were the boom brackets (not a good start?)! Quick phone call to Justin and next day they arrived with many apologies.

Everything seemed to be well cut, drilled and finished. Instructions were clear albeit with a few grammatical errors. So, a period of good weather was searched for (I looked for 3 straight days) as I do not recommend building fiddly antennas outside when it is frosty or windy.....

The design is through the boom and the element insulators are excellent. A very tight push fit although a dab of rubber sealant is recommended as a belt and braces approach. The DE is a folded dipole with 'trombone' ends to match (see above). The driven elements are well made and all the nuts and bolts are stainless steel. One thing I would say is that the trombone joints really need a smear of aluminium grease to protect the joint from corroding and the antennas really need to be supplied with a pot (I already had some).

This photo shows trombone joint used for tuning the driven element.

Three days (Ha – Ha!!!) of good weather was set aside for some not so strenuous building. Big hint here. If you are building long yagis a pair of 'B & D Workmates' are the best thing since sliced bread.

Next job was to get them onto the H frames. Not such an easy job as they are 5.5m long (high) and attaching them onto the frames whilst trying not to crush the daffodils with my size 9 boots is not easy as I have a very narrow and awkward garden. I used the old H frame arrangement which is not ideal as it was designed for my old arrays and is a tad smaller than optimum but time will only tell. Making 2 new H frames out of fibreglass tubing would be getting on for another couple of hundred quid....

Anyway, they were all eventually attached to the H frames. I say eventually as this was lock down time and people kept on walking past the garden along the road and asking me questions. I tried not to be rude but it ain't easy when you have the antenna in one hand whilst trying to fit the boom brackets with the other hand and not falling off the step ladder and someone is asking you damn fool questions through the hedge! Mind you, it was my own fault – the language was somewhat ripe at times and I could be heard a long way off.....Anyway, the projected 3 day build morphed into 4 days.

Next job was testing. This meant taking off the existing coax leads (8 off) to the splitters, attaching my antenna VNA and adjusting the trombone joint on each DE for minimum SWR. At this point it is worth saying (if you are not already aware) that when it comes to wiring up an array or any combination of antennas the centre conductor of the coax has to go to the same end of the DE on ALL the beams and conversely so does the braiding onto the other side. Failure to remember this will mean the antennas will be out of phase and basically the array will be useless. I managed to get an SWR on the H plane of 1.07:1 whilst on the V plane 1.2:1. I wonder of the difference is due to a degraded cable but too late – that'll do.

The DE connections and the method of fixing the elements can be see in the picture above. The connectors iberally coated with rubber sealant that is available from either Innovantennas or SotaBeams. I was initially quite suspect about this type of sealant, but after removing the tails from my other DEs that had been up for 3 years, I was very impressed with the complete lack of any corrosion. When using this sealant it is a good idea to warm the connectors on the DE with a hot air gun to help the sealant flow. Also after applying the sealant again use the hot air gun to smooth off the surface and allow it run into the crevices. Justin also recommends putting a tab of sealant where the element goes into the insulator as a 'belt and ' braces' fixing.
The coil of coax is a simple balun (ie low cost, easy). There is a multitude of opinions around regarding feeding of DEs and baluns most of which goes over my head. Notice that the coil is not cable tied directly to the boom but is stood off using an insulator (Stauff clamps) as is recommended. One type of balun that is quite popular involves (for 2m) 4 ferrite sleeves encased in shrinkwrap. That means 32 ferrites at about £3 a pop which would mean a much heavier array and a much lighter bank balance !

So, it was now crunch time. Does it work? Pointing the array at GB3VHF produced a very good signal indeed. I could say that S meter said S9 but with 25 db LNAs any S meter reading is somewhat tenuous. Cornwall and NI beacons all good as well. The Angus beacon was inaudible due to huge QRN to the north of me. However, I then noticed that GB3VHF was very strong on V pol and very weak on H pol. Both the H and V signals go into a MET ME2-XP transverter where they are combined with a simple mixer. As GB3VHF transmits with horizontal polarization that could only mean one thing – I had wrongly connected the receive lines up, so down it came again....

**Finished array up and also 'OFCOM legal' due to height above ground!!**

As for EME, that is a problem as I type. The moon is very low over the horizon and when it does appear I'm in bed. Hopefully I'll get up in time to see it set in the next few days. As much as I like working EME, my pit takes precedence !

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## Bits and pieces:


***Local activity digital ATV activity*** on QO-100 geostationary satellite has been led by Dave G8VZT (aka M5AFG), Paul M0PNN, David M0YDH and Peter G1OAR.
Here's an off-air photo taken by David M0YDH (11 March). Dave 'VZT looks a bit surprised . . . .

***Well done Dave, G0CER***, for winning the "GMDX (low power) Trophy" in the IOTA (Islands on the Air) in the UK&CD, 24hr, single op. section last year.
Please let the editor know of **any** member's contest successes, which we like to celebrate.

***Various comments arising from OfCOM's up-coming requirement for all Intermediate and Full A.R. Licence holders to calculate their EMF*** whilst on the air:
From Paul M0PNN "We are not plotting the quantum path of an electron through four dimensions but for some operators, we may as well be. Someone with a learning difficulty would see that form as nothing but another barrier to getting to the air. (31/03) and from Don G6FHM "I totally agree-I have not known a problem for the last 60 year". Peter G4URT "Blimey - what a palaver and (almost) totally useless unless you have a 'bog standard' set up. It makes too many assumptions such as only one type of feeder and antenna type (array is not included!)" (31/03). And later "I can fully understand and agree with the need for regs for fixed microwave transmitters (mobile phone masts) but applying them to radio amateurs is somewhat a sledgehammer / nut scenario. If anyone can supply a definitive explanation in words of one syllable I would be grateful!" (G4URT 03/03)
"It seems as though my quest for a definitive answer has been provided by John G4SWX the RSGB VHF manager. At his suggestion on Moon-Net, I used the VK3UM EMR Calculator available from :https://www.vk5dj.com/doug.html .This program which works from HF - SHF and includes long wires, yagis, dishes is excellent. You don't have to bother with duty factors etc as you can specify the mode (except FT8!!) and it automatically adjusts accordingly. Most importantly it actually takes into account of the HEIGHT of the antenna and therefore gives a more accurate picture of the real world. And the good news? If I run 400w at 144.1Mhz to a 21dBi array as long as the tower is more than 6.53m high I have no issues whatsoever as the safe distance is 0.0m !!! If I lower the tower to 5m, then the safe distance goes up to 10.4m unless I elevate to 2.79 degs.
This looks good enough for me so I've printed it off, dated it and put it with my licence! This program is highly recommended no matter what system / power / band you run. And as the advert for Yorkshire Tea that is current on the TV at the moment says ' that'll do' !!! "(Peter G4URT again, 04/03/2021)

**New Q Codes for Current Times**

| | |
|---|---|
| QLD | I am locked down. |
| QUA | I am quarantined. |
| QPD | I am in the middle of a pandemic. |
| QTP | I have toilet paper. Want to trade for a new car? |
| QHG | I need a hug. |
| QSH | I am sheltering at home. |
| QHS | I have hand sanitizer. Want to trade for two new cars? |

And another 'calculator' (translator) sent in by John M0XJA :

| | |
|---|---|
| QSD | I am observing social distancing. |
| QCV! | I hate Coronavirus. |
| QWH | Wash your Hands |
| QWH? | Did you Wash your Hands? |
| QSS | Stay Safe |
| QTS | I have toilet paper AND hand sanitizer. Want to trade for IC-7300 or FT-991A? |